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TO : The Files

FROM :

SUBJECT: (Visit to

Contract RD-107, Task Order #4)

(INC)

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1. A meeting was held on 23 August 1956 at

Present at the meeting were:

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2. Development work during the past period has included work on four phases: testing of various ferrite materials at the frequency of interest, determination of the effect of adjacent ferrite cores, design of a standard field generator and the development of a transistor isolation stage. A number of ferrite materials have been tested but none have been found with a Q appreciably over 100. A search of other manufactures literature disclosed a powdered iron core which was claimed to have a Q of 200.

tried to buy some cores from this company but the company refused saying that the order was too small. suspects that the company did not want to sell to for competitive reasons. is now attempting to purchase the cores for . Tests run on the mutual interference of closely spaced cores have indicated that each core of the matrix will have to be at least 6 inches from any other core. Recognizing that there may be 20 cores in the matrix, this fact will give an indication of the size of the matrix. The transistor pre-amplifier shown in Figure 1 of the attached proposal has been designed to have a noise figure of only 3 db. However, if many pre-amplifiers are connected in series, it will be necessary to use narrow-band-pass filters so that noise generated outside the 100 cycle band amplified will not be passed into the receiver.

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3. In order to compare the performance of the various antenna configurations described in the attached proposal it will be necessary to generate a standard field. The design of a 10 foot diameter loop antenna for this purpose has been completed and the loop is expected to be operating the first week of September. It has been suggested that the device now in use, which the ferrite matrix will replace, might be tested in this standard field. Such a test would give a measure of the improvement to be expected in field use of the ferrite matrix. The writer request comments on this suggestion.

4. The attached proposal was prepared for contractual reasons but it will also serve to describe the antenna configurations which will be investigated during this program. Development for the next period will consist of further testing of ferrite materials and the powdered iron core (if it can be obtained), and testing of antenna configurations in the standard field.

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Attachment: ✓

Proposal for VLF Antenna Development